

# An Invasive Foe or a Resilient Friend?



A stand of common reed (*Phragmites australis*) in the Meadowlands

Photographs USFWS / Gene Nieminen

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Most biologists are of the opinion that common reed, which scientists know as *Phragmites australis*, has become an aggressive and towering pest in our wetlands, producing impenetrable stands, displacing beneficial wetland plants and providing little food or shelter value to wildlife. Others, such as Richard Kane of the New Jersey Audubon Society, consider it a host for numerous resident birds such as the marsh wren and other neo-tropical migratory passerines, bitterns, night-herons, grebes, ibises, egrets, ducks, geese, and rails, including State threatened and endangered species and rare breeders in northeastern New Jersey.

It is most certainly true that *Phragmites australis* supports populations of these birds at the Hackensack Meadowlands; we have seen them there, finding food and cover among the reeds. But questions remain: is *Phragmites* native to the Northeast region? A study of tidal marsh history in southeastern Connecticut, found *Phragmites* rhizomes older than 3,000 years buried in the substrate. Cores from a site on the south shore of Long Island, New York revealed a transitional predominance of *Phragmites australis* around 1700 AD. Recently, Kristin Saltonstall at Yale University documented 11 varieties of common reed native to North America and 27 worldwide, including the invasive haplotype M, likely the one aggressively expanding in Atlantic coast wetlands. Haplotype M was found in all of Saltonstall's sampling sites in New Jersey, including one near the Vince Lombardi rest stop off Interstate 95 in the Meadowlands.

Can the much-noted spread of *Phragmites australis* at the Hackensack Meadowlands be attributed to environmental changes of an anthropogenic nature? Well, eight percent of the U.S. population lives within a 50-mile radius from the heart of these wetlands. Prior to European colonization, the Hackensack Meadowlands sustained healthy and extensive stands of Atlantic white-cedar (*Chamaecyparis thyoides*), but nowadays only a few waterlogged stumps remain. Later, four reservoirs were built upstream to hold back 17 billion gallons of water for human use, limiting the flow of freshwater and causing tidal salt-water intrusions in these wetlands. Not all plant species coexist well with humans, but over the last 100 years, our nemesis / friend has spread like wildfire in the path of our developments, channels, ditches, dams, dikes, and pollution. Perhaps we should not confuse the shadows of reed stands with our own.

Does the rest of the world share our view of *Phragmites*? Various cultures use it for food, forage, and fertilizers, and make musical instruments, ornaments, toys, bags, baskets, sandals, clothing, rafts, mats, snares, screens, partitions, thatched roofs, pens, and paper with it. Medicinally, *Phragmites* is used in midwifery for postpartum recovery, as an emetic (vomit-inducing), as a decoction in treating diarrhea and related ailments, as an analgesic (pain-relieving), as an expectorant (clearing of the throat and lungs), and in splinting. Some even hail it as a symbol in religious ceremonies and in heraldry. *Phragmites australis* is so valued that

sustainable reed harvesting is a concern in most of Europe today.

Could then "Phrag" have any redeeming qualities to us other than the one highlighted by Richard Kane? How about phytoremediation, the use of plants to remove contaminants from the environment? For many years, the Hackensack River was so polluted that fish could not survive. Although in recent years we have applied better pollution-control measures and fish have made a comeback, grievous contaminant problems still persist in the river. For phytoremediation in the Hackensack Meadowlands, *Phragmites* is very efficient in trapping large amounts of contaminants, primarily through its root system. Bacteria and fungi in the *Phragmites* rhizosphere use nitrogen, phosphorus, hydrocarbons, creosote, pesticides, insecticides, surfactants, solvents, and sewage as sources of energy and carbon. *Phragmites* also retains and buries large amounts of metals, such as chromium, copper, lead, and zinc, and is considered an excellent plant in wastewater treatment systems.

Although an intrusive plant in the southern coastal plain of New Jersey, *Phragmites* provides important wetland functions and values in the northeastern coastal areas of the State. Given the degraded conditions in the Hackensack Meadowlands, *Phragmites* may be benefiting many fish and wildlife resources as we strive to improve our relationship with nature and restore the natural functioning ecosystem of this area.